

## PATENT COOPERATION TREATY

PCT

## INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

(Chapter II of the Patent Cooperation Treaty)

(PCT Article 36 and Rule 70)

REC'D 28 DEC 2005

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Applicant's or agent's file reference P025PCT	FOR FURTHER ACTION See Form PCT/IPEA/416	
International application No. PCT/US2005/003215	International filing date (day/month/year) 03.02.2005	Priority date (day/month/year) 06.02.2004
International Patent Classification (IPC) or national classification and IPC G02B13/06, G02B17/08		
Applicant INTERSCIENCE, INC. et al.		
<p>1. This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.</p> <p>2. This REPORT consists of a total of 6 sheets, including this cover sheet.</p> <p>3. This report is also accompanied by ANNEXES, comprising:</p> <p>a. <input checked="" type="checkbox"/> <i>(sent to the applicant and to the International Bureau)</i> a total of 4 sheets, as follows:</p> <ul style="list-style-type: none"> <li><input checked="" type="checkbox"/> sheets of the description, claims and/or drawings which have been amended and are the basis of this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions).</li> <li><input type="checkbox"/> sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box.</li> </ul> <p>b. <input type="checkbox"/> <i>(sent to the International Bureau only)</i> a total of (indicate type and number of electronic carrier(s)), containing a sequence listing and/or tables related thereto, in computer readable form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions).</p>		
<p>4. This report contains indications relating to the following items:</p> <ul style="list-style-type: none"> <li><input checked="" type="checkbox"/> Box No. I Basis of the opinion</li> <li><input type="checkbox"/> Box No. II Priority</li> <li><input type="checkbox"/> Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability</li> <li><input type="checkbox"/> Box No. IV Lack of unity of Invention</li> <li><input checked="" type="checkbox"/> Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement</li> <li><input type="checkbox"/> Box No. VI Certain documents cited</li> <li><input type="checkbox"/> Box No. VII Certain defects in the international application</li> <li><input type="checkbox"/> Box No. VIII Certain observations on the international application</li> </ul>		
Date of submission of the demand 01.09.2005	Date of completion of this report 27.12.2005	
Name and mailing address of the international preliminary examining authority:   European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465	Authorized Officer  Casse, M Telephone No. +49 89 2399-2769	

**INTERNATIONAL PRELIMINARY REPORT  
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International application No.  
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**Box No. I Basis of the report**

1. With regard to the **language**, this report is based on the international application in the language in which it was filed, unless otherwise indicated under this item.
  - This report is based on translations from the original language into the following language, which is the language of a translation furnished for the purposes of:
    - international search (under Rules 12.3 and 23.1(b))
    - publication of the international application (under Rule 12.4)
    - international preliminary examination (under Rules 55.2 and/or 55.3)
2. With regard to the **elements\*** of the international application, this report is based on (*replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report*):

**Description, Pages**

1-10 as originally filed

**Claims, Numbers**

1-44 as amended (together with any statement) under Art. 19 PCT

**Drawings, Sheets**

1/5-5/5 as originally filed

- a sequence listing and/or any related table(s) - see Supplemental Box Relating to Sequence Listing

- The amendments have resulted in the cancellation of:
  - the description, pages
  - the claims, Nos.
  - the drawings, sheets/figs
  - the sequence listing (*specify*):
  - any table(s) related to sequence listing (*specify*):
- This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).
  - the description, pages
  - the claims, Nos.
  - the drawings, sheets/figs
  - the sequence listing (*specify*):
  - any table(s) related to sequence listing (*specify*):

\* If item 4 applies, some or all of these sheets may be marked "superseded."

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**Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

**1. Statement**

Novelty (N)	Yes: Claims	11,17,32,38,43,44
	No: Claims	1-10,12-16,18-31,33-37,39-42
Inventive step (IS)	Yes: Claims	17,38
	No: Claims	1-16,19-37,39-44
Industrial applicability (IA)	Yes: Claims	1-44
	No: Claims	

**2. Citations and explanations (Rule 70.7):**

**see separate sheet**

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**Re Item V.**

- 1 Reference is made to the following documents:
  - D1 : GB 867 251 A (THE GENERAL ELECTRIC COMPANY LIMITED) 3 May 1961 (1961-05-03)
  - D2 : US 2002/121574 A1 (DAVIS JOHN E) 5 September 2002 (2002-09-05)
  - D3 : WO 02/059676 A (WAVEGROUP LTD; GAL, EHUD; LITEYGA, GENNADIY; EYAL, REUVEN) 1 August 2002 (2002-08-01)
  - D4 : WO 03/096078 A (SPHEREVIEW LTD; GAL, EHUD) 20 November 2003 (2003-11-20)
  - D5 : EP 0 816 891 A (HE HOLDINGS, INC. DBA HUGHES ELECTRONICS; RAYTHEON COMPANY) 7 January 1998 (1998-01-07)
  - D6 : WO 03/042743 A (MATSUSHITA ELECTRIC INDUSTRIAL CO., LTD; MATSUKI, DAIZABURO; YOSHIKAWA) 22 May 2003 (2003-05-22) interpreted on the basis of family member EP1452899.

- 2.) The present application does not meet the criteria of Article 33(1) PCT, because the subject-matter of claim 1 is not new in the sense of Article 33(2) PCT.
  - 2.1) Document D3 discloses (the references in parentheses applying to this document):

An apparatus (figures 1a,1b) integrating forward and panoramic field (figures 1c,2b) comprising:

a primary reflector 25 having a convex surface in relation to the forward field and reflective on at least part of its surface,  
a secondary flat reflector 20, forward of the primary reflector relative to the forward field,  
a primary reflector hole 10 centered on the optical axis of the apparatus,  
a secondary reflector hole 15 in the reflecting surface centered on the optical axis of the apparatus.

From fig. 1a, it is clearly apparent that hole 10 should have a larger diameter than hole 15.

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2.2) The above lack of novelty notwithstanding, document D4 show in figure 6 a similar arrangement with a flat second reflector with additional lenses 22 at the secondary reflector hole and document D5, figure 3 with table 5, also shows a similar arrangement with a flat secondary mirror having a secondary hole smaller than the primary convex reflector 60 hole. Documents D4 and D5 further question the inventive activity of claim 1.

3.) Dependent claims 2-16, 18 to 23 do not contain any features which, in combination with the features of any claim to which they refer, meet the requirements of the PCT in respect of novelty and/or inventive step (Article 33(2) and (3) PCT). see documents D1 to D6 and the corresponding passages cited in the search report. In summary:-

Claims 2,4,6: see D3 figure 33 as an example.

Claim 3 see D6 family document paragraphs 148-151

Claim 5 afocal elements are suggested in D1 by the hint at periscopic systems page 2 lines 121-127.

Claim 7 see D3 figure 1c for example which is interpreted as a schematic representation of field of view sectors, i.e. portions of a nearly 360° spherical FOV (page 17 line 1-3). The **angular field of view values** shown in figure 1c are continuous. See also D4 page 15 lines 13-15.

Claims 8 to 10 and 18 to 21 are obvious features or uses for optical or reflecting apparatuses, D5 is also used in the IR range.

Claims 12 to 14, the primary of D1 is spherical but hints at other aspherical surfaces, D3 page 26 lines 3 to 10 discloses all surface shapes.

The second aperture in D6 appears larger than the first hole.

The features of claims 15 and 16 contradict claim 1 but are obvious modifications of D3 suggested by the other documents of the search report.

4.) The combination of the features of dependent claims 17 and 38 is neither known from, nor rendered obvious by, the available prior art since none of the panoramic cameras with forward looking optics disclose the possibility to tilt the primary mirror in this configuration. This allows to decenter the central field of view relatively to the circumferential imaged field.

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5.) Method claims 24 to 42 mirror the apparatus claims 1 to 23 and the above objections and comments apply mutatis mutandis to these claims. Claim 43 and 44 are obvious modifications of the teaching of D3 in view of D5 figure 3.